REVIVING ABANDONED RESERVOIRS WITH HIGH-PRESSURE AIR INJECTION: APPLICATION IN A FRACTURED AND KARSTED DOLOMITE RESERVOIR

Semi-Annual Report

Reporting Period Start Date: October 1, 2005

Reporting Period End Date: March 31, 2006

Principal Investigators: Robert Loucks, Stephen C. Ruppel

Date Report Issued: August 11, 2006

DOE Award Number: DE-FC26-02NT15442

Bureau of Economic Geology
John A. and Katherine G. Jackson School of Geosciences
The University of Texas at Austin
Box X, University Station
Austin, TX 78713-8924

August 2006

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, of factoring by the United States Government or any agency thereof. The view and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

ABSTRACT

The field operator, Goldrus Producing Company, has been unable to secure funding needed to continue the field demonstration phase of the project. Accordingly, we temporarily halted all project activities while we looked for additional funding. Goldrus felt confident that funds could acquired by third quarter 2005 at which time it would have been necessary to request a project extension to complete the originally designed study. A project extension was granted but Goldrus was not able to secure funds. The Bureau of Economic Geology has submitted a request for a final no-cost extension (August, 2006) in order to carry out final activities and close the project.

TABLE OF CONTENTS

LIST OF GRAPHICAL MATERIALS

None attached.

I. INTRODUCTION

The Bureau of Economic Geology and Goldrus Producing Company assembled a multidisciplinary team of geoscientists and engineers to evaluate the applicability of high-pressure air injection (HPAI) in revitalizing a nearly abandoned carbonate reservoir (the Barnhart Ellenburger field) in the Permian Basin of West Texas. The potential of HPAI for improved oil recovery from Barnhart field has been established in preliminary laboratory tests, studies and a reservoir pilot project. To assess the effectiveness and economics of HPAI technology more completely, we developed plans to integrate more detailed characterization of reservoir properties with laboratory modeling of flow and a field demonstration and monitoring program. We have completed most of the tasks except the larger scale field demonstration because of lack of funds by the operator. We still believe that high-pressure air-injection technology has the potential to significantly increase the flow of oil from deep carbonate reservoirs in the Permian Basin, a target resource that can be conservatively estimated at more than 1.5 billion barrels.

II. EXECUTIVE SUMMARY

The implementation of plans developed by The Bureau of Economic Geology and Goldrus Producing Company to demonstrate the effectiveness of high-pressure air injection (HPAI) in revitalizing a nearly abandoned carbonate reservoir in the Permian Basin of West Texas has been delayed because of the inability of Goldrus, the field operator, to secure needed funds to continue field development. Because of the current lack of funding, we have temporarily suspended activities on the project.

We still believe HPAI can be shown to be an extremely effective means to recover the remaining oil in deep reservoirs like the Ellenburger at Barnhart field and that this technology has the potential to revolutionize oil recovery operations in the Permian Basin and other mature oil-containing basins in the United States. Accordingly, we want

to summarize our work and to list Ellenburger reservoirs in the Permian Basin that may be candidates for HPAI before funding ends.

III. EXPERIMENTAL

No experimental results were obtained in the past 6 months.

IV. RESULTS AND DISCUSSION

There are no new results since the last report because we have temporarily suspended activities on the project.

V. CONCLUSION

Project activities were suspended because the field operator could not obtain additional funding to permit continuation of field demonstration activities.

LIST OF ACRONYMS AND APPENDICES

HPAI: High pressure air injection